AMENDMENT TO THE CLAIMS

1. (Original) A method for performing an Inverse Discrete Wavelet Transform (IDWT) comprising, for a first sub-band level and a second sub-band level in an N level Discrete Wavelet Transform, the steps of:

(i) ~~inverse transforming, using filters having associated filter widths,~~ ~~data~~ processing sets of data points from ~~associated~~ corresponding sub-bands [[in]] of the first sub-band level[[,]] to form ~~processed data in a corresponding~~ a set of processed data points in a sub-band [[in]] of the second sub-band level; and

(ii) ~~inverse transforming, using second filters having the same corresponding associated filter widths, the processed data in conjunction with corresponding data from associated sub-bands in the second sub-band level, wherein steps (I) and (ii) are performed in a pipeline manner~~ processing the set of processed data points in the sub-band of the second sub-band level in conjunction with at least one set of data points from a corresponding at least one sub-band of the second sub-band level, to form a set of processed data points in a sub-band of a subsequent sub-band level,

wherein each said set of data points is smaller than the number of data points in a corresponding sub-band level.

2. (Currently Amended) A method according to claim 1~~, whereby said filters are used in relation to level N, and said second filters are time shared by all other =1 pairs of consecutive levels =1 and =2, ..., 1 and 0, the second filters being substantially applied to only a single pair of levels at a given time~~.

wherein the processing in the steps (i) and (ii) is performed using respective sets of first filters and second filters, said first filters and second filters being fixed and of equal width,

wherein said first filters and said second filters are affected by time sharing one set of filters in regard to processing of sub-band levels N to 2, said one set of filters being applied to a single sub-band level of sub-band levels N to 2 at a time, and

wherein said second filters are affected by one set of dedicated filters in regard to processing of sub-band level 1.

3. (Currently Amended) A method according to claim 2, ~~whereby~~ wherein the time sharing is performed using a time multiplexer which multiplexes data from ~~pairs of levels to the second~~ the sub-band levels N to 2 to the time shared set of filters.

4. (Currently Amended) A method according to claim 2, ~~where~~ wherein data associated with ~~a pair~~ sub-bands of one of said sub-band levels ~~associated with the second filters,~~ N to 2 is stored while the ~~second~~ set of time shared filters [[are]] is being applied to sub-bands of another ~~pair~~ one of said sub-band levels N to 2.

5. (Currently Amended) A method according to any one of claims 1 to 4 wherein said first filters and said second filters are N dimensional separable IDWT transformers.

6. (Currently Amended) A method for performing an IDWT in relation to [[an]] a 2-dimensional N level Discrete Wavelet Transform, said method comprising steps of:

(i) ~~applying a first set~~ processing sets of M x M ~~filters to~~ data points from ~~associated~~ corresponding sub-bands [[in]] of a first sub-band level~~, thereby~~ to form a set of M x M processed data points in a ~~corresponding~~ sub-band [[in]] of a second sub-band level; and

(ii) ~~applying, in a pipeline manner in respect to =1 succeeding sub-band levels, =1 corresponding sets of M x M filters, each corresponding set being applied to M x M processed data points from a preceding level in conjunction with corresponding data from associated sub-bands in the succeeding sub-band level, thereby to form, in a pipeline manner, a set of M x M output data points~~ processing the set of M x M processed data points in the sub-band of the second sub-band level in conjunction with sets of M x M data points from corresponding sub-bands of the second sub-band level, to form a set of M x M processed data points in a sub-band of a subsequent sub-band level,

wherein each said set of M x M data points is smaller than the number of data points in a corresponding sub-band level.

7. (Currently Amended) An apparatus ~~adapted~~ for performing an ~~Inverse Discrete Wavelet Transform (IDWT)~~ IDWT comprising, for a first sub-band level and a second sub-band level in an N level Discrete Wavelet Transform:

~~filters having associated filter widths,~~ (i) means for ~~inverse transforming~~

processing sets of data points from ~~associated~~ corresponding sub-bands [[in]] of the first sub-band level ~~thereby~~ to form a set of processed data points in a ~~corresponding~~ sub-band [[in]] of the second sub-band level; and

~~second filters having the same corresponding associated filter widths, for inverse transforming the processed data in conjunction with corresponding data from associated sub-bands in the second sub-band level, wherein the filters and the second filters are arranged in a pipeline mariner~~

(ii) means for processing the set of processed data points in the sub-band of the second sub-band level in conjunction with at least one set of data points from a corresponding at least one sub-band of the second sub-band level, to form a set of processed data points in a sub-band of a subsequent sub-band level,

wherein each said set of data points is smaller than the number of data points in a corresponding sub-band level.

8. (Currently Amended) An apparatus ~~method~~ according to claim 7, wherein the means for processing in the paragraphs (i) and (ii) comprise respective first filters and second filters, said first filters and second filters being fixed and of equal width, and wherein said apparatus further comprises: ~~said filters are used in relation to level N, and said second filters are time shared by all other =1 pairs of consecutive levels =1 and =2, ..., 1 and 0, the second filters being substantially applied to only a single pair of levels at a given time~~

one set of filters for time sharing;

means for time sharing, in regard to processing the sub-band levels N to 2, said one set of filters to affect said first filters and said second filters, said one set of filters being applied to a single sub-band level of sub-band levels N to 2 at a time; and

one set of dedicated filters for affecting, in regard to processing of sub-band level 1, said second filters.

9. (Currently Amended) An apparatus according to claim 8, further comprising:

a time multiplexer which multiplexes data from ~~pairs of levels to the second filters to perform the time sharing~~ the sub-band levels N to 2 to the time shared set of filters.

10. (Currently Amended) An apparatus according to claim 8, further comprising:

storage means for storing data associated with ~~a pair of sub-band levels associated with the second filters while the second filters are being applied to another pair of sub-band levels~~ sub-bands of one of said sub-band levels N to 2 while the set of time shared filters is being applied to sub-bands of another one of said sub-band levels N to 2.

11. (Currently Amended) An apparatus according to any one of claims 7 to 10 wherein said first filters and said second filters are N dimensional separable IDWT transformers.

12 (Currently Amended) An apparatus ~~adapted~~ for performing an IDWT in relation to [[an]] a 2-dimensional N level Discrete Wavelet Transform, said apparatus comprising;

~~a first set of M x M filters~~ means for ~~applying to~~ processing sets of M x M data points from ~~associated~~ corresponding sub-bands [[in]] of a first sub-band level[[,]] ~~thereby~~ to form a set of M x M processed data points in a ~~corresponding~~ sub-band [[in]] of a second sub-band level; and

~~=1 corresponding sets of M x M filters, for applying, in a pipeline manner in respect to =1 succeeding sub-band levels, each corresponding set being applied to M x M processed data points from a preceding level in conjunction with corresponding data from associated sub-bands in the succeeding sub-band level, thereby to form, in a pipeline manner, a set of M x M output data points~~

(ii) means for processing the set of M x M processed data points in the sub-band of the second sub-band level in conjunction with sets of M x M data points from corresponding sub-bands of the second sub-band level, to form a set of M x M processed data points in a sub-band of a subsequent sub-band level,

wherein each said set of M x M data points is smaller than the number of data points in a corresponding sub-band level.

13. (Currently Amended) A computer readable memory medium for storing a program ~~for apparatus which performs~~ for performing an ~~Inverse Discrete Wavelet Transform (IDWT)~~ IDWT, said program comprising [[, for]] in relation to a first

sub-band level and ~~a second sub-band level in an N level Discrete Wavelet Transform~~ an N level Discrete Wavelet Transform:

~~code for a first inverse transforming step for inverse transforming, using filters having associated filter widths, data from associated sub-bands in the first sub-band level, to form processed data in a corresponding sub-band in the second sub-band level; and~~

~~code for a second inverse transforming step for inverse transforming, using second filters having the same corresponding associated filter widths, the processed data in conjunction with corresponding data from associated sub-bands in the second sub-band level, wherein the code for the first inverse transforming step and the code for the second inverse transforming step are executed in a pipeline manner~~

(i) code for processing sets of data points from corresponding sub-bands of the first sub-band level to form a set of processed data points in a sub-band of the second sub-band level; and

(ii) code for processing the set of processed data points in the sub-band of the second sub-band level in conjunction with at least one set of data points from a corresponding at least one sub-band of the second sub-band level, to form a set of processed data points in a sub-band of a subsequent sub-band level,

wherein each said set of data points is smaller than the number of data points in a corresponding sub-band level.

14. (Currently Amended) A computer readable memory medium for storing a program ~~for apparatus which performs~~ for performing an IDWT in relation to a 2-dimensional N level Discrete Wavelet Transform, said program comprising:

(i) ~~first~~ code for ~~an applying step, for applying a first set~~ processing sets of M x M ~~filters to~~ data points from ~~associated~~ corresponding sub-bands [[in]] of a first sub-band level~~, thereby~~ to form a set of M x M processed data points in a ~~corresponding~~ sub-band [[in]] of a second sub-band level; and

(ii) ~~second code for an applying step, for applying, in a pipeline manner in respect to =1 succeeding sub-band levels, =1 corresponding sets of M x M filters, each corresponding set being applied to M x M processed data points from a preceding level in conjunction with corresponding data from associated sub-bands in the succeeding sub-band level, thereby to form, in a pipeline manner, a set of M x M output data points~~ code for processing the set of M x M processed data points in the sub-band of the second sub-band level in conjunction with sets of M x M data points from corresponding sub-bands of the second sub-band level, to form a set of M x M processed data points in a sub-band of a subsequent sub-band level,

wherein each said set of M x M data point is smaller than the number of data points in a corresponding sub-band level.

15. (Currently Amended) A method for performing an IDWT in relation to an N level Discrete Wavelet Transform, said method comprising~~, for first sets of data points from associated sub-bands of a first sub-band level, and a second set of data points~~

~~from a second sub-band level, said first set and said second set of data points each having first data dimensions~~, the steps of:

(i) ~~inverse transforming,~~ processing using a first computational block ~~having said first data dimensions, said first~~ sets of data points ~~to form a set of processed data points in a~~ from corresponding ~~sub-band in the second~~ sub-bands of a first sub-band level~~, said~~ to form a set of processed data points ~~having said first data dimensions~~ in a sub-band of a second sub-band level; and

(ii) ~~inverse transforming,~~ processing using a second computational block ~~having said first data dimensions,~~ the set of processed data points in the sub-band of the second sub-band level in conjunction with ~~a corresponding~~ at least one set of data points from ~~associated sub-bands in~~ a corresponding at least one sub-band of the second sub-band level, [[;]]

wherein ~~steps (I) and (ii) are performed~~ each said set of data points is smaller than the number of data points in a ~~pipeline manner thereby to form a set of output data points having said first data dimensions~~ corresponding sub-band level.

16. (Currently Amended) An apparatus for performing an IDWT in relation to an N level DWT, said apparatus comprising, in respect to a current sub-band level and a subsequent sub-band level: [[;]]

a first plurality of parallel convolvers each having a plurality of output data channels, and each said parallel convolver receiving data from a corresponding subband at said current sub-band level;

a second plurality of serial convolvers each receiving data from corresponding ones of said output data channels and producing data for a low-low frequency sub-band of the subsequent sub-band level.

17. (Original) A method for performing an IDWT in relation to an N level DWT, said method comprising, in respect to a current sub-band level and a subsequent sub-band level, steps of:

providing data from corresponding subbands at said current sub-band level to a first plurality of parallel convolvers, each said parallel convolver having a plurality of output data channels;

providing data from corresponding ones of said output data channels to a second plurality of serial convolvers, each said second plurality of serial convolvers producing data for a low-low frequency sub-band of the subsequent sub-band level.

18. (New) A method according to claim 1, wherein the set of processed data points in the sub-band of the second sub-band level is formed before all data points in the sub-bands of the first sub-band level are processed.

19. (New) A method according to claim 1, wherein the step (ii) commences before all data points in the sub-bands of the first sub-band level are processed.

20. (New) A method according to claim 6, wherein the set of processed

M x M data points in the sub-band of the second sub-band level is formed before all data points in the sub-bands of the first sub-band level are processed.

21. (New) A method according to claim 6, wherein the step (ii) commences before all data points in the sub-bands of the first sub-band level are processed.

22. (New) The method according to claim 15, wherein the set of processed data points in the sub-band of the second sub-band level is formed before all data points in the sub-bands of the first sub-band level are processed.

23. (New) A method according to claim 15, wherein the step (ii) commences before all data points in the sub-bands of the first sub-band level are processed.